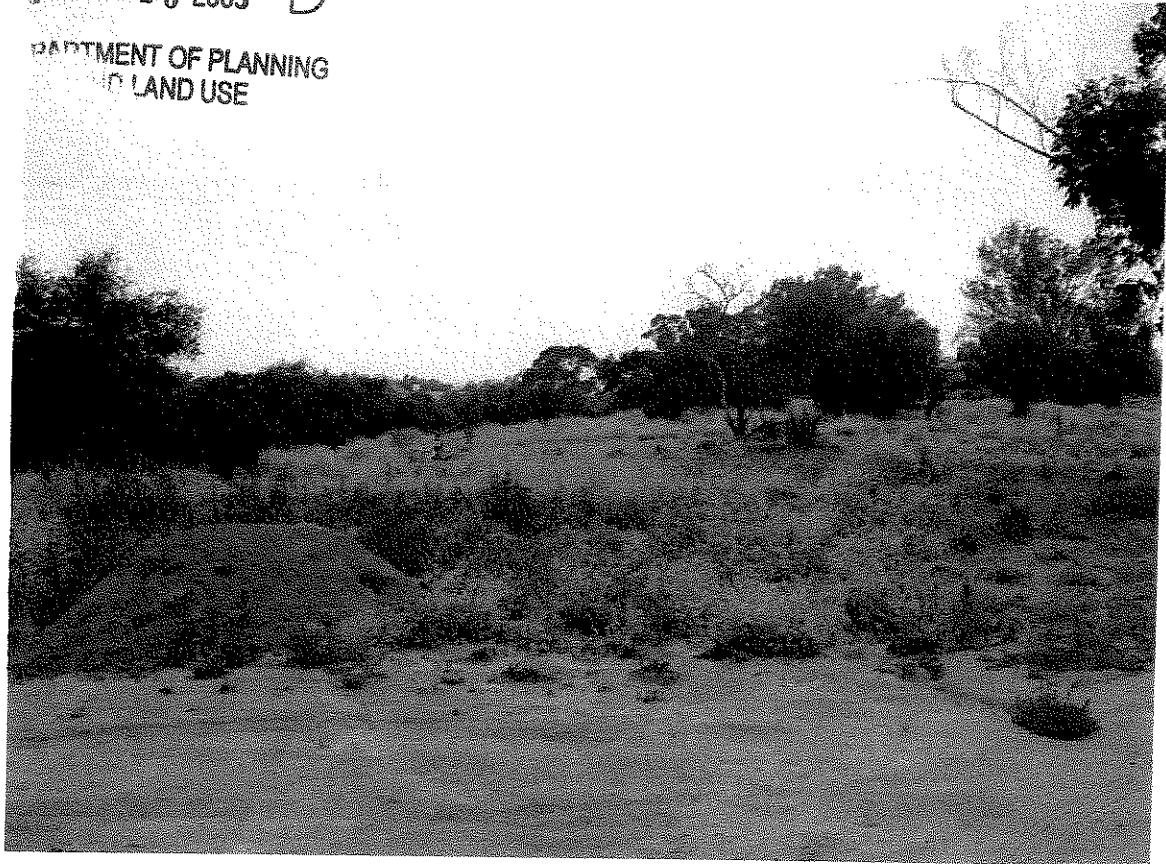


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DEPARTMENT OF PLANNING
AND LAND USE



Fire Protection Plan/Fuel Management Plan

For TM5243-RPL4

Submitted By

CSSI/Southwest Fire And Protection

Lamont Landis

760-702-4370

October 5, 2005

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CSSI/SOUTHWEST FIRE & PROTECTION

760-702-4370

Date: October 5, 2005

To: Stephen Abbott Fire Marshal NCFPD

From: Lamont Landis CSSI/SOUTHWEST FIRE -760-702-4370

Subject: Fire Protection Plan/Fuel Management Plan for TM 5243-RPL4.

Introduction

This Fire Protection Plan/Fuel Management Plan (FPP/FMP) has been prepared for TM 5243-RPL4, lot split with eight resident's development. This plan has been developed to protect the residential structures from potential wildfire hazards to the maximum extent practical. This plan does not guarantee that the structure will not burn, but greatly reduces that possibility. These are not shelter in place residences. A variety of factors have been incorporated into the fuel modification plan including wildfire history, prevailing wind patterns, existing vegetation /fuel loading , terrain, adjacent vegetation/land use.

This project is within the North County Fire Protection District jurisdiction. The project consists of approximately 13.24 acres.

The Assessors Parcel # is 105-640-71

The Tentative Parcel Map # is TM 5243-RPL4

The number of lots will be 8

The types of occupancies are single-family residences.

Topography

The project encompasses flat land, gentle slopes.

Fire Department Location and Response Time

Initial Fire Department response is from Fire Station #2 located at 2180 Winterwarm St. This station is staffed by 3 firefighters. Apparatus include 1 Type One Engine and 1 Type Three Engine. The station is located 2.4 miles from the above property and is 4.73 minutes away by using the estimated timetable in NFPA 1142.

Wildfire History

On February 10, 2002 the Gavilan Wildfire burned over 5200 acres of natural open space and destroyed 34 homes in the western portion of Fallbrook and the Fallbrook Weapons Annex. Embers from the wildfire traveled long distances due to 50 mile plus an hour Santa Ana winds causing two structures to be destroyed. The Gavilan Fire was driven by Santa Ana winds fuel by 50 year old brush and an extended drought.

Fire Potential For the Area

The site has the potential to experience a vegetation fire. This is based on type and continuity of the vegetation, Santa Ana winds, high, temperatures, low humidity and drought conditions.

Effect of The Project

The development of this area will reduce the spread of wildfire by, reducing the fuel loading, the addition of water supply (additional fire hydrants), paving of roads in the project and the clearing of home sites will provide additional fuel breaks in the area.

Existing Onsite and Surrounding Area Vegetation

Onsite vegetation consists of disturbed non-native grassland, coast live oak, and coastal sage scrub. (See biological report for this project) The surrounding property has like vegetation and is maintained on an annual bases. Three sides of this development have similar- developed land that breaks up the continuity of the vegetation that does allow for some slowing of the fires progress.

Water Supply

The water supply for this proposed project will come from existing and proposed water main maintained by the Fallbrook Public Utility district. Domestic and fire flow systems will be designed to San Diego County, North County Fire Protection District and RMWD requirements (fire hydrants with 2500 GPM fire flow at 20 PSI residual). The location of hydrants will be shown on the final parcel map.

Landscape Concept

A low fuel, drought tolerant landscape concept has been designed for the proposed slopes. Low fuel, drought tolerant native plant species will be incorporated to the maximum extent possible. A plant species list is included in appendix A.

The final landscape concept and plant palette shall be reviewed and approved by the San Diego County Department of Planning And Land Use and the North County Fire Protection District.

Individual homeowners will be responsible for installing and maintaining their individual front, side and rear yard landscaping. All homeowner installed landscaping must be in accordance with the approved landscape species list.

BehavePlus Wildfire Modeling

The BehavePlus Fire Modeling System (Version 2.0.2) developed by the U.S. Forest Service, Rocky Mountain Research Station is the generally accepted software for modeling large-scale wildfire behavior and characteristics. The Behave Plus System was designed to evaluate a variety of wildfire variables for large wild land fires including surface fire spread, safety zones, fire containment, spotting distance crown scorch and probability of ignition. Two aspects of this program (surface fire spread and safety zone) have been utilized to assist in determining acceptable fuel modification requirements. The Behave Plus program, coupled with onsite and surrounding area vegetation, access, slope and weather conditions, are the basis for the following.

The BehavePlus Fire Model System been run for the following worst case scenarios:

60 MPH wind 80-degree ambient air temperature, 3 % dead fuel moisture, 60 % live fuel moisture and 5 % average slope aspect. The model was run for two fuel model scenarios, as the project contains varying types of fuels.

It should be noted that the BehavePlus model does not and cannot include all variables associated with a specific site and regime, and adjacent mixed land uses can influence the results.

The BehavePlus model run results are summarized in table 1.

Table 1

BehavePlus Fire Model

Fuel Model	Flame Length	Safety Zone Radius	Safety Zone Sep. Distance
1-Grassland	10.0 feet	47.0 feet	40.0 feet
10-Riparian	34.3 feet	144.0 feet	137.0 feet

The Behave Plus, coupled with the expected offshore Santa Ana wind direction, anticipated down slope fire line aspect, and relatively low fuel vegetation within the urban wildland interface areas, and existing fuel modified areas, serves as a basis for formulation of the recommended fuel modification zone locations.

Fuel Modification Zones

A two tiered fuel modification zone system is proposed to create an adequate fire safety buffer along the proposed development areas and access roads which would be defensible space in case of a wildfire. The fuel modification zone recommendations are based upon a combination of BehavePlus modeling data, onsite vegetation, access, surrounding area fuel conditions, slope and worst-case weather conditions. The fuel modification zones have been designed to meet the requirements of NCFPD and San Diego County DPLU.

Landscape Requirements

All landscaping within the fuel modification zones must be approved by the North County Fire Protection District and shall include low fuel, drought tolerant plant species.(see Appendix A)
A landscape plan shall be submitted for approval and shall comply with fuel modification plan.

Mitigation for Structures:

All new structures shall be equipped with the following interface features and shall comply with all DPLU enhanced fire resistive features;

1. Roofs will be a Class A noncombustible material and shall meet DPLU standards.
2. Eaves will be of ignition resistive material and boxed.(DPLU 198)
3. Exterior walls will be a ignition resistive material.(DPLU 664)
4. All structures will be equipped with automatic fire sprinklers (NFPA 13D). All sprinkler systems shall be approved by the Fire Department prior to installation.
5. All future outbuildings must be approved by NCFPD prior to installation.
6. Provide the following ignition restive construction features:
 - A. Exterior walls of residence and garages shall have ignition resistive material (stucco, masonry or approved cement fiberboard. (No wood) (DPLU 664
 - B. Any eaves soffits and facias must comply with ignition resistant construction. (DPLU664)
 - C. There shall be no paper faced insulation in the attic or other ventilated spaces.
 - D. There shall be no plastic or vinyl on the exterior.
 - E. Ventilation: No attic ventilation opening or louvers shall be permitted in soffits or overhanging areas. Attic or foundation ventilation openings or types of ventilation shall be covered with ¼ " mesh corrosion resistant or other approved equivalent protection. All attic ventilation shall comply with requirements of the building code. Vents shall not face any unmodified fuel that is not cleared 100 feet from the structure. All vents and their locations shall be approved by "Building Official" and the "Fire Department".
 - F. Exterior doors shall be not less than 20 min. fire rating.

- G. All projections shall be of non-combustible or ignition resistive construction, to include the following; exterior balconies, carports, decks, gazebos, patios covers, unenclosed roofs, and floors and other outbuildings. Vinyl or plastic material is not allowed. All appendages and or projections from the structure shall be of like construction.
- H. Wood or vinyl fencing or other attached items, the first five feet must be of ignition resistive construction or meet the same standard as the exterior walls of the structure.
- I. Spark arresters shall be installed on all chimneys and other vents on appliances as required per building and fire codes.
- J. Windows are restricted to tempered glass, or dual-pane glass assemblies, or glass block. Vinyl window must have welded corners with metal reinforcing to prevent glass from falling out with flame impingement. Vinyl must be labeled showing ANS/AAMA/NWWDA 101/I.S.2-97 Structural requirements.

Fuel Management Zone:

Parcel 1,2,3,4,5,6,7 and 8 (parcel is combined with parcel 7)

Parcel 1

As proposed on TM 5243 RPL4 the conceptual residential structure, from the structure to a point 30 feet in all directions shall be maintained as zone A and from a point 30 feet from the structure west to a point 70 feet shall be maintained as zone B. From 30 feet north and south to the property line shall be zone B. From 30 feet east to the edge of the road shall be zone B.

Parcel 2

As proposed on TM5243RPL from the conceptual structure 30 feet in all direction shall be zone A. From 30 feet to property line, street, another structure or 70 feet in all directions shall be zone B.

Parcels 3, 4 and 5

As proposed on TM 5243, from the conceptual residential structure to point 30 feet shall be maintained as zone A. From 30 feet to the property line or 100 feet (if connected to sewer) shall be maintained as zone B. Or from 30 feet to the property line or 70 feet (if on a septic system) with a concrete wall at 70 feet mark shall be zone B

Note: This proposed project is intended to be on a sewer system.

Parcels 6,7,8

As proposed on TM5243RPL From the conceptual residential structure to 30 feet shall be maintained as zone A. From 30 feet to the property line or 100 feet which ever comes first shall be maintained as zone B.

Fuel Management Zone A:

Zone A is the first 30 feet or as otherwise indicated on the TM5243RPL. This is an area where native vegetation has been removed, irrigated, and planted with drought-tolerant and fire resistant plant material. Plant selection shall be from Appendix A.

The purpose of zone A (set back zone) is to provide a defensible space for fire suppression forces to protect structures from radiant and convective heat. The following shall be part of fuel management of this zone;

1. No combustible construction, groves, firewood, propane tanks, fuel, or combustible native or ornamental vegetation shall be allowed within the 30 foot set back zone A or within 30 feet of the edge of slopes.
2. Mature trees (>18') to be limbed up or canopied 6' from ground level and spaced on 40' centers.
3. No tree limbs within 10' of chimney outlets or dead limbs overhanging structures.
4. Plant spacing must be as follows:
 - A. Slopes 0-20 % ---2 times the height of the mature plant.
 - B. Slopes 21-40 %---4 times the height of the mature plant.
 - C. Slopes >41 %---6 times the height of the mature plant.

Fuel management Zone B

This management zone, consist of irrigated landscaping. Landscape must be submitted to NCFPD for approval. The plans must delineate the fuel modification area that will be permanently irrigated. Plant material selection will be from the Appendix A list. Plans shall include methods of erosion control to protect against slope failure. The following shall apply to Zone B:

1. Clear all existing native combustible vegetation, which may then be irrigated and planted. Refer to appendix A.
2. Existing groves may exist within this area, but a 50% clearing is required.
3. Trees or new groves are to be maintained as noted for zone A and spaced as follows:
 - A. Slopes 0-20%---40' on center.
 - B. Slopes 21-40---60' centers
 - C. Slopes > 40%---90' center.

4. Tree litter (duff) may remain under groves up to 6'' in depth.
5. Fire resistive plant materials are also required in Zone B to control soil erosion and/or to reduce vegetation mass near the wildland interface.
6. Plant spacing will be the same as noted for Zone A.

Fuel Model 1

(1 foot deep) Where fire spread is governed by fine herbaceous fuels that have cured or nearly cured. Fires that are surface fires that move rapidly through cured grass and associated material. With very little shrub or timber present, generally less than one-third of the area. (NWCG handbook Fire Behavior) worst case.

Fuel Model 10

(1 foot deep) The fires run through the surface and ground fuels with greater fire intensity than other timber litter models. Dead and down fuels include greater quantities of 3-inch or larger limb wood resulting from over-maturity or natural events that create a large load of dead material on the forest floor. Crowning out, spotting, and torching of individual trees are more frequent in this fuel leading to potential fire control difficulties. Any forest type may be considered when heavy down material are present; examples are insect or diseased stands, wind-thrown stands, over-mature situations with deadfall, and cured light thinning or partial-cut slash.

North County Fire Protection District / Fire Prevention Bureau Requirements

The proposed project is subject to policies, guidelines and regulations contained in the North County Fire Protection District, Fire Prevention Bureau Policy and Procedures Manual. (Section 340.18), and the San Diego County Consolidated Fire Code, (Appendix II-A) and the vegetation Abatement in Sensitive Habitats Memorandum of Understanding. Fire safety and hillside residential design requirements are contained in the Fire Prevention/Plans and Permits section. Specific fuel modification plan and vegetation management criteria are also promulgated in this section.

Purpose, Policy and Authority

The North County Fire Protection District fuel modification guidelines were created to provide fire protection services and greater public safety in areas prone to wildland brush fires, by establishing additional development standards for those areas. The fuel modification plans are required in designated high fire hazard areas as mapped on the San Diego County General plan

Hazard Map (SANGIS), in conjunction with the California Department of Forestry and the United States Forest Service.

Fire Safe Community Planning

The proposed project has been designed to be a fire safe community with defensible space. The creation of minimal wildland-urban interface areas, the fire access roads and a comprehensive fuel modification plan. The proposed residential lots are adjacent to existing residential land use areas with existing fuel modification requirements. Onsite and surrounding area vegetation (primarily disturbed non-native grassland) is not considered high or very high fuel and does not have long flame lengths or intensity associated with model 4 fuels. The onsite grassland associated with this property typically results in a slow burning and intensity (low flame length). High winds coupled with steep slopes low humidity can increase the risk hazard of the fire this type of vegetation is rarely associated with major conflagration resulting in property loss. The onsite wildfire risk to the proposed dwellings, based upon onsite and surrounding vegetation in conjunction with south facing rolling hills and prevailing Santa Ana wind pattern is considered moderate, and will be mitigated with the implementation of a fuel modification plan.

Landscape Requirements/Restrictions

The landscaping within the fuel modification zones must be approved by the North County Fire Protection District and shall include low fuel, drought tolerant type vegetation from the list adopted by the County of San Diego (see appendix A).

Fire Access Road

The proposed fire access road is designed to allow for egress for the public and fire fighting access for the fire department. The fuel modification on or adjacent to the road adds to the reduction of the spread of the fire and is part of the overall fuel modification plan. Turnarounds on all lots shall comply with Appendix B. The proposed access roads, meets or exceeds all San Diego County DPLU and NCFPD requirements. There are two ways in and out the project meeting San Diego County DPLU standards. The two roads serving the project are: Beaver Creek and Fallbrook St.

Fuel Modification Zone Maintenance Requirements

Fuel modification zones must be maintained in a manner that will fulfill the intent of the fuel modification plan and meet the requirements of the NCFPD. Maintenance will include initial planting, weeding, irrigation installation and maintenance, plant pruning. Removal of dead and down vegetation, and the replacement of plants as required.

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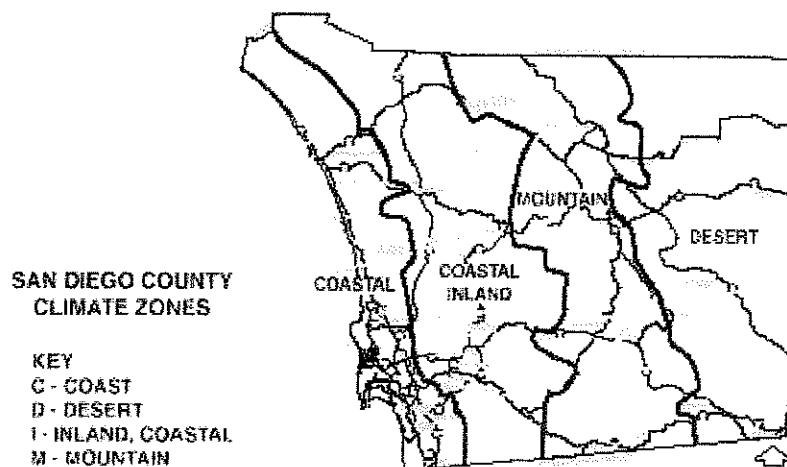


LAND USE AND ENVIRONMENT

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COUNTY OF SAN DIEGO ACCEPTABLE PLANTS FOR A DEFENSIBLE SPACE IN FIRE PRONE AREAS



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ALL PLANTS ON THE FOLLOWING LIST are considered to be drought-tolerant in the particular climate zone noted. Those that grow best in riparian areas, as indicated by the (R), are the least drought-tolerant plants on the list.

SPECIAL NOTE: When planting, it is necessary to water deeply to encourage the plant roots to seek natural moisture in the soil. This watering should continue for at least three years to allow the plants to naturalize. More water should be provided in summer and less (if any) in the winter. These plants should be weaned off the supplemental irrigation and become less dependent on it over the establishment period.

No plant is totally fire resistant. The plants listed were chosen to due to their high water content, minimum amount of flammable resins and/or low fuel volume.

Definitions:

Defensible Space: The area around a structure, where material capable of causing fire has been cleared, reduced or changed, to act as a barrier between an advancing fire and the structure.

Drought-Tolerant Plant Materials: Trees, shrubs, groundcovers, and other vegetation capable of sustained growth and reproduction with only natural moisture. Occasional supplemental irrigation is necessary only in extreme drought situations.

Establishment Period: The time it takes for a plant to become drought-resistant. This is usually a period of three years and is the time when supplemental irrigation is necessary.

Native or Naturalizing Plant Species: Plant species native to the region or introduced which, once established, are capable of sustaining growth and reproduction under local climatic conditions without supplemental irrigation.

<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>LOCATION</u>
TREES		
Acer		
platanoides	Norway Maple	M
rubrum	Red Maple	M
saccharinum	Silver Maple	M
saccarum	Sugar Maple	M
macrophyllum	Big Leaf Maple	C/ (R)
Alnus rhombifolia	White Alder	C/I/M (R)
Arbutus		
unedo	Strawberry Tree	All zones
Archontophoenix		
cunninghamiana	King Palm	C
Arctostaphylos spp.	Manzanita	C/I/D
Brahea		
armata	Blue Hesper Palm	C/D
edulis	Guadalupe Palm	C/D
Ceratonia siliqua	Carob	C/I/D

<i>Cercidium floridum</i>	Blue Palo Verde	D
<i>Cercis occidentalis</i>	Western Redbud	C/I/M
<i>Cornus</i>		
<i>nuttallii</i>	Mountain Dogwood	I/M
<i>stolonifera</i>	Redtwig Dogwood	I/M
<i>Elaeagnus</i>		
<i>angustifolia</i>	Russian Olive	I/M
<i>Eriobotrya</i>		
<i>japonica</i>	Loquat	C/I/D
<i>Erythrina caffra</i>	Kaffirboom Coral Tree	C
<i>Ginkgo biloba</i> "Fairmount"	Fairmount Maidenhair Tree	I/M
<i>Gleditsia triacanthos</i>	Honey Locust	I/D/M
<i>Juglans</i>		
<i>californica</i>	California Walnut	I
<i>hindsii</i>	California Black Walnut	C/I
<i>Lagerstroemia indica</i>	Crape Myrtle	I/D/M
<i>Ligustrum lucidum</i>	Glossy Privet	I
<i>Liquidambar styraciflua</i>	Sweet Gum	C/I/M
<i>Liriodendron tulipifera</i>	Tulip Tree	I
<i>Lyonothamnus floribundus</i>		
ssp. <i>asplenifolius</i>	Fernleaf Catalina Ironwood	C
<i>Melaleuca</i> spp.	Melaleuca	C/I/D
<i>Myoporum</i> spp.	Myoporum	C/I
<i>Nerium oleander</i>	Oleander	C/I/D
<i>Parkinsonia aculeata</i>	Mexican Palo Verde	D
<i>Pistacia</i>		

chinensis	Chinese Pistache	C/I/D
vera	Pistachio Nut	I
Pittosporum		
phillyraeoides	Willow Pittosporum	C/I/D
viridiflorum	Cape Pittosporum	C/I
Platanus		
acerifolia	London Plane Tree	All zones
racemosa	California Sycamore	C/I/M
Populus		
alba	White Poplar	D/M
fremontii	Western Cottonwood	I
trichocarpa	Black Cottonwood	I/M
Prunus		
xblireiana	Flowering Plum	M
caroliniana	Carolina Laurel Cherry	C
cersifera 'Newport'	Newport Purple-Leaf Plum	M
ilicifolia	Hollyleaf Cherry	C
lyonii	Catalina Cherry	C
serrulata 'Kwanzan'	Flowering Cherry	M
yedoensis 'Akebono'	Akebono Flowering Cherry	M
Quercus		
agrifolia	Coast Live Oak	C/I
engelmannii	Engelmann Oak	I
suber	Cork Oak	C/I/D
Rhus		
lancea	African Sumac	C/I/D

Salix spp.	Willow	All zones (R)
Tristania conferta	Brisbane Box	C/I
Ulmus		
parvifolia	Chinese Elm	I/D
pumila	Siberian Elm	C/M
Umbellularia californica	California Bay Laurel	C/I
SHRUBS		
Agave	Century Plant	D
americana	Desert Century Plant	D
deserti	Shaw's Century Plant	D
shawii		
Amorpha fruticosa	False Indigobush	I
Arbutus		
menziesii	Madrone	C/I
Arctostaphylos spp.	Manzanita	C/I/D
Atriplex		
canescens	Hoary Saltbush	I
lentiformis	Quail Saltbush	D
Baccharis		
glutinosa	Mule Fat	C/I
pilularis	Coyote Bush	C/I/D
Carissa grandiflora	Natal Plum	C/I
Ceanothus spp.	California Lilac	C/I/M
Cistus spp.	Rockrose	C/I/D
Cneoridium dumosum	Bushrue	C
Comarostaphylis		

diversifolia	Summer Holly	C
Convolvulus cneorum	Bush Morning Glory	C//M
Dalea		
orcuttii	Orcutt's Delea	D
spinosa	Smoke Tree	I/D
Elaeagnus		
pungens	Silverberry	C//M
Encelia		
californica	Coast Sunflower	C/I
farinosa	White Brittlebush	D/I
Eriobotrya		
deflexa	Bronze Loquat	C/I
Eriophyllum		
confertiflorum	Golden Yarrow	C/I
staechadifolium	Lizard Tail	C
Escallonia spp.	Escallonia	C/I
Feijoa sellowiana	Pineapple Guava	C//D
Fouquieria splendens	Ocotillo	D
Fremontodendron		
californicum	Flannelbush	I/M
mexicanum	Southern Flannelbush	I
Galvezia		
juncea	Baja Bush-Snapdragon	C
speciosa	Island Bush-Snapdragon	C
Garrya		
elliptica	Coast Silktassel	C/I

flavescens	Ashy Silktassel	I/M
Heteromeles arbutifolia	Toyon	C/I/M
Lantana spp.	Lantana	C/I/D
Lotus scoparius	Deerweed	C/I
Mahonia spp.	Barberry	C/I/M
Malacothamnus		
clementinus	San Clemente Island Bush Mallow	C
fasciculatus	Mesa Bushmallow	C/I
Melaleuca spp.	Melaleuca	C/I/D
Mimulus spp.	Monkeyflower	C/I (R)
Nolia		
parryi	Parry's Nolina	I
parryi ssp. wolfii	Wolf's Bear Grass	D
Photinia spp.	Photinia	All zones
Pittosporum		
crassifolium		C/I
rhombifolium	Queensland Pittosporum	C/I
tobira 'Wheeleri'	Wheeler's Dwarf	C/I/D
undulatum	Victorian Box	C/I
viridiflorum	Cape Pittosporum	C/I
Plumbago auriculata	Cape Plumbago	C/I/D
Prunus		
caroliniana	Carolina Laurel Cherry	C
ilicifolia	Hollyleaf Cherry	C
lyonii	Catalina Cherry	C
Puncia granatum		C/I/D

Pyracantha spp.	Pomegranate	All zones
Quercus	Firethorn	
dumosa		C/I
Rhamus	Scrub Oak	
alaternus		C/I
californica	Italian Blackthorn	C/I/M
Rhaphiolepis spp.	Coffeeberry	C/I/D
Rhus	Rhaphiolepis	
continus		M
integrifolia	Smoke Tree	C/I
laurina	Lemonade Berry	C/I
lentii	Laurel Sumac	C/D
ovata	Pink-Flowering Sumac	I/M
trilobata	Sugarbush	I
Ribes	Squawbush	
viburnifolium		C/I
speciosum	Evergreen Currant	C/I/D
Romneya coulteri	Fuschia-Flowering Gooseberry	I
Rosa	Matilija Poppy	
californica		C/I
minutifolia	California Wild Rose	C/I
Salvia spp.	Baja California Wild Rose	All zones
Sambucus spp.	Sage	C/I/M
Symphoricarpos mollis	Elderberry	C/I
Syringa vulgaris	Creeping Snowberry	M
Tecomaria capensis	Lilac	C/I/D

Teucrium fruticans	Cape Honeysuckle	C/I
Toxicodendron diversilobum	Bush Germander	I/M
Verbena lilacina	Poison Oak	C
Xylosma congestum	Lilac Verbena	C/I
Yucca schidigera	Shiny Xylosma	D
whipplei	Mojave Yucca	I
	Foothill Yucca	
GROUNDCOVERS		
Achillea	Yarrow	All zones
Aptenia cordifolia	Aptenia	C
Arctostaphylos spp.	Manzanita	C/I/D
Baccharis pilularis	Coyote Bush	C/I/D
Ceanothus spp.	California Lilac	C/I/M
Cerastium tomentosum	Snow-in-Summer	All zones
Coprosma kirkii	Creeping Coprosma	C/I/D
Cotoneaster spp.	Redberry	All zones
Drosanthemum hispidum	Rosea Ice Plant	C/I
Dudleya brittonii	Britton's Chalk Dudleya	C
pulverulenta	Chalk Dudleya	C/I
virens	Island Live-Forever	C
Eschscholzia californica	California Poppy	All zones

Euonymus fortunei		
'Carrierei'	Glossy Winter Creeper	M
'Coloratus'	Purple-Leaf Winter Creeper	M
Ferocactus viridescens	Coast Barrel Cactus	C
Gaillardia grandiflora	Blanket Flower	All zones
Gazania spp.	Gazania	C/I
Helianthemum spp.	Sunrose	All zones
Lantana spp.	Lantana	C//D
Lasthenia		
californica	Common Goldfields	I
glabrata	Coastal Goldfields	C
Lupinus spp.	Lupine	C//M
Myoporum spp.	Myoporum	C/I
Pyracantha spp.	Firethorn	All zones
Rosmarinus officinalis	Rosemary	C//D
Santolina		
chamaecyparissus	Lavender Cotton	All zones
virens	Santolina	All zones
Trifolium frageriferum	O'Connor's Legume	C/I
Verbena		
rigida	Verbena	All zones
Viguiera laciniata	San Diego Sunflower	C/I
Vinca		
major	Periwinkle	C/I
minor	Dwarf Periwinkle	M
VINES		

Antigonon leptopus	San Miguel Coral Vine	C/I
Distictis buccinatoria	Blood-Red Trumpet Vine	C//D
Keckiella cordifolia	Heart-Leaved Penstemon	C/I
Lonicera		
japonica 'Halliana'	Hall's Honeysuckle	All zones
subspicata	Chaparral Honeysuckle	C/I
Solanum		
jasminoides	Potato Vine	C//D
PERENNIALS		
Coreopsis		
gigantea	Giant Coreopsis	C
grandiflora	Coreopsis	All zones
maritima	Sea Dahlia	C
verticillata	Coreopsis	C/I
Heuchera maxima	Island Coral Bells	C/I
Iris douglasiana	Douglas Iris	C/M
Iva hayesiana	Poverty Weed	C/I
Kniphofia uvaria	Red-Hot Poker	C//M
Lavandula spp.	Lavender	All zones
Limonium californicum		
var. mexicanum	Coastal Statice	C
perezii	Sea Lavender	C/I
Oenothera spp.	Primrose	C//M
Penstemon spp.	Penstemon	C//D
Satureja douglasii	Yerba Buena	C/I
Sisyrinchium		

bellum	Blue-Eyed Grass	C/I
californicum	Golden-Eyed Grass	C
Solanum		
xantii	Purple Nightshade	C/I
Zauschneria		
californica	California Fuschia	C/I
cana	Hoary California Fuschia	C/I
'Catalina'	Catalina Fuschia	C/I
ANNUALS		
Lupinus spp.	Lupine	C/I/M

[\[GO TO TOP OF PAGE \]](#)

Chief Admin Office	Financial/General Govt	Community Services	Health & Human Services	Land Use & Environment
Public Safety	San Diego County	Table Of Contents	Search	Help

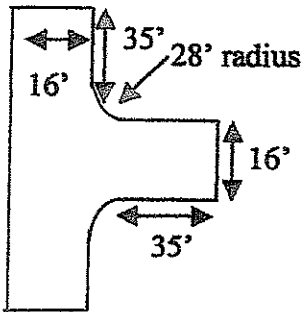
webmaster@co.san-diego.ca.us

Appendix B

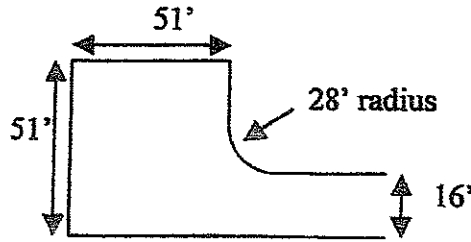
North County Fire Protection District

Fire Apparatus Turnaround Configurations

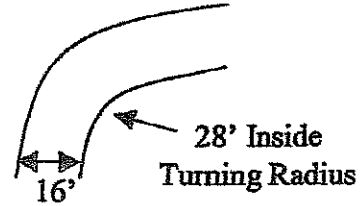
NORTH COUNTY FIRE PROTECTION DISTRICT
Fire Prevention Bureau
(760) 723-2010
Fire Apparatus Turnaround Configurations



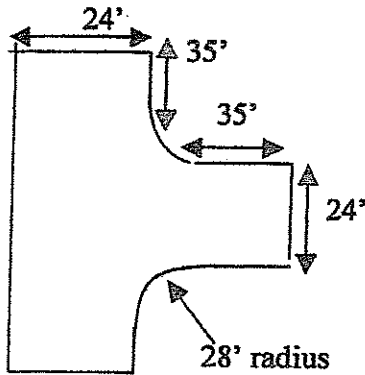
Private Driveway
Hammerhead



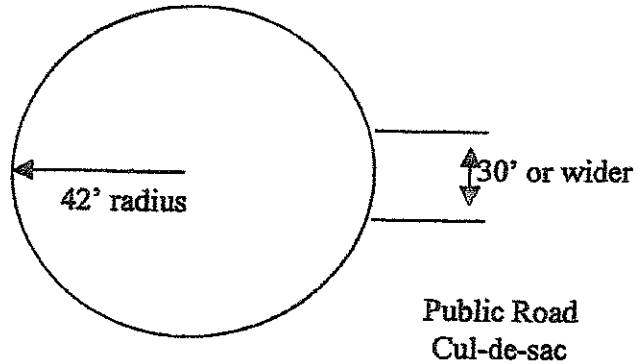
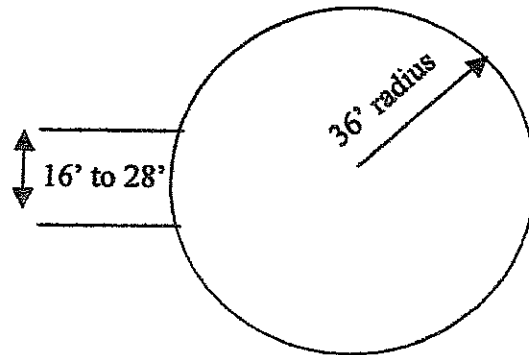
Alternate Private
Driveway Hammerhead



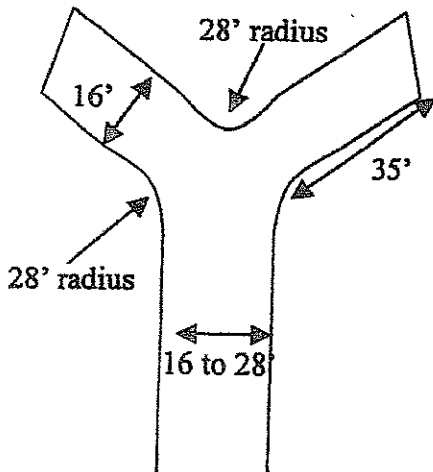
Private Road or
Driveway Cul-de-sac



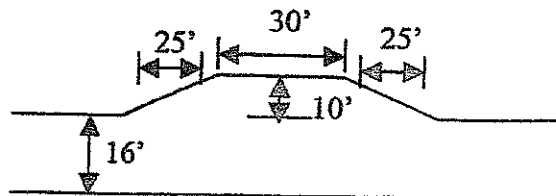
Private Road
Hammerhead



Public Road
Cul-de-sac



Hammerhead Incorporating Radius

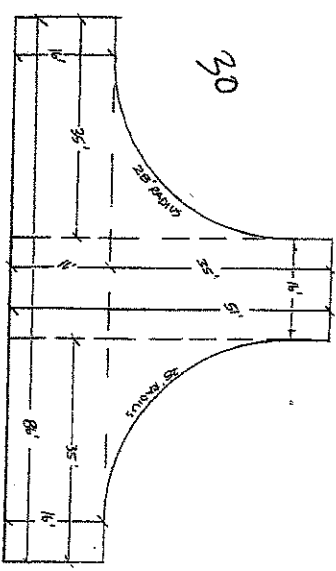
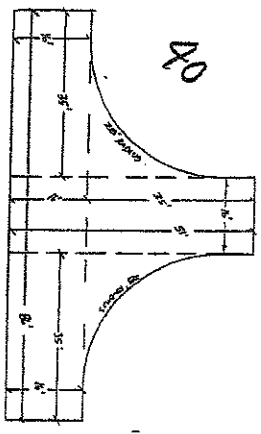
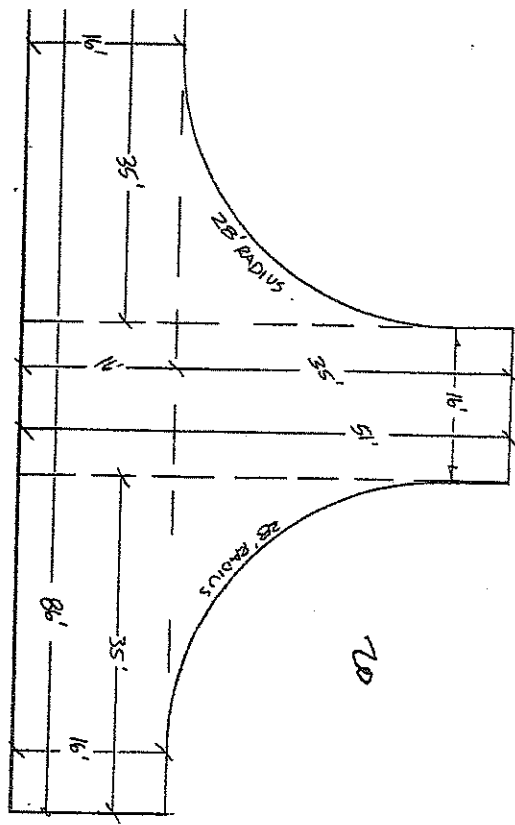
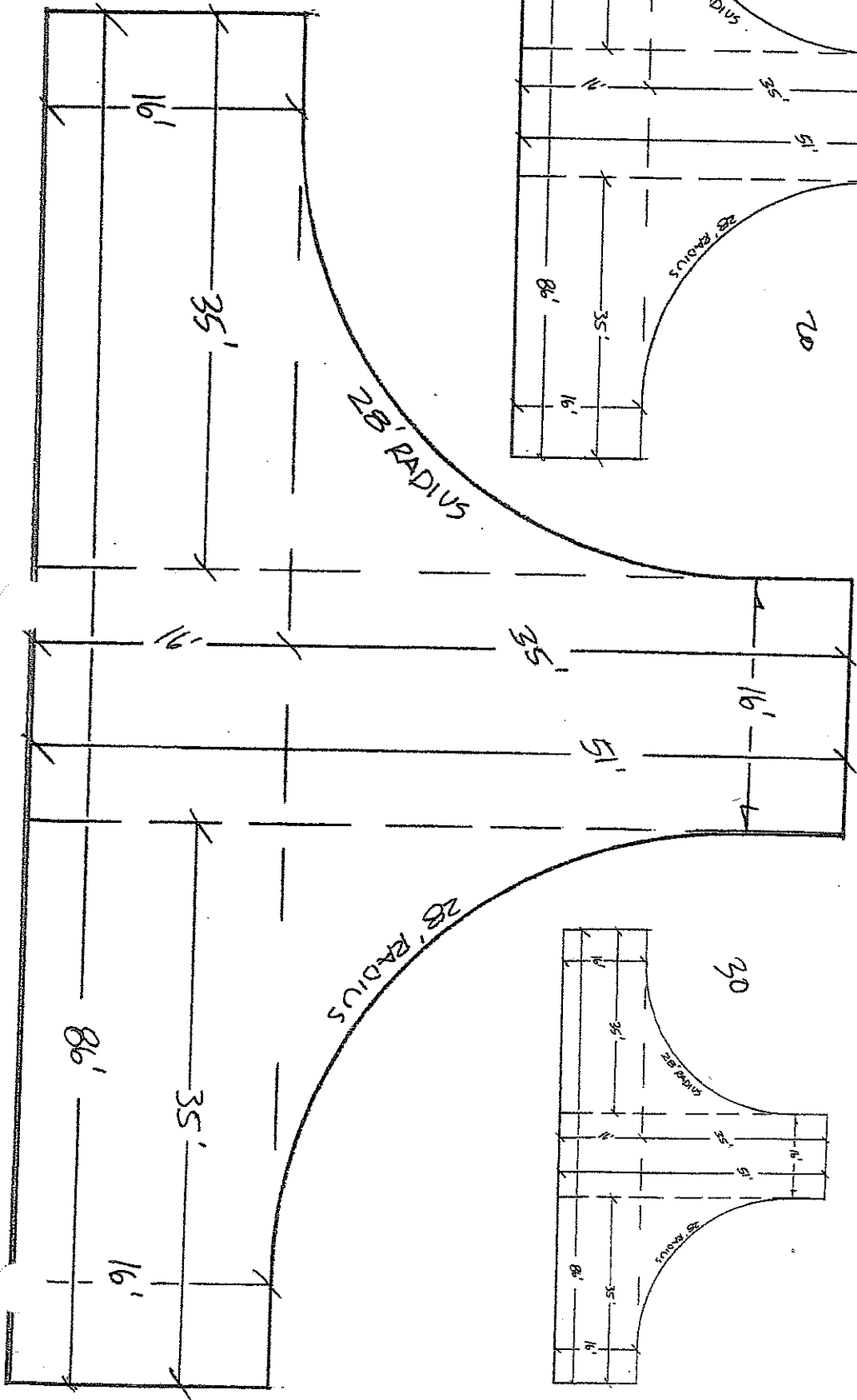


Turnout—Required for driveways
In excess of 300-400'

****NOT TO SCALE****

(OVER)

10



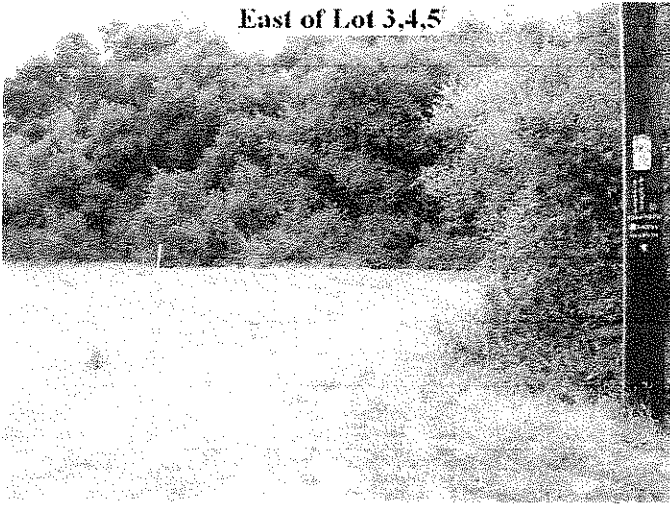
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20

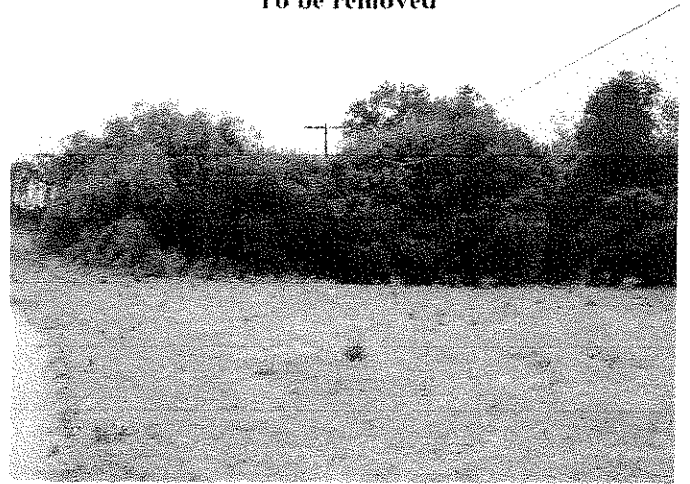
Appendix C

Photos

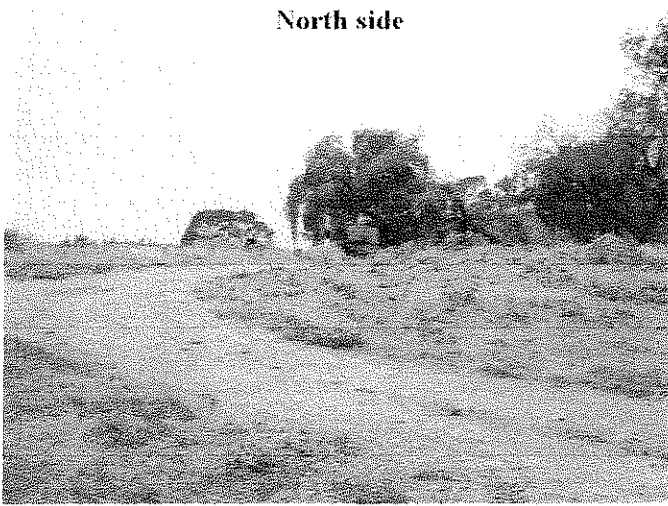
East of Lot 3,4,5



To be removed



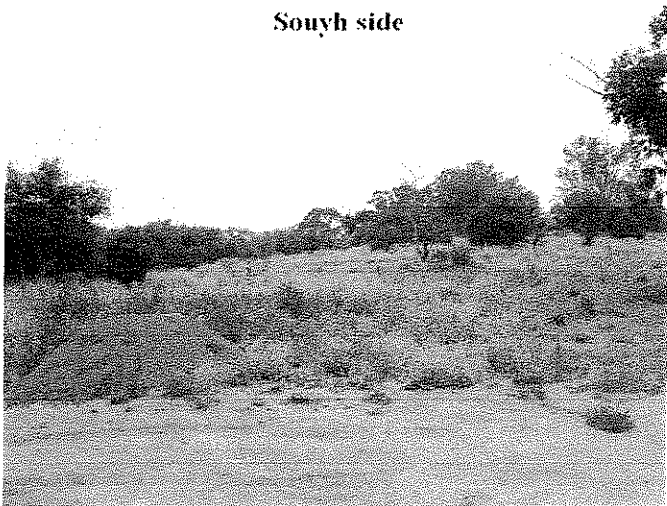
North side



West Side



South side



Appendix D

Behaveplus2 Fire Model



Modules: SURFACE, SAFETY

Description		TM5243RPL
Fuel/Vegetation		
Fuel Model		10
Fuel Moisture		
1-h Moisture	%	3
10-h Moisture	%	3
100-h Moisture	%	3
Live Herbaceous Moisture	%	
Live Woody Moisture	%	60
Weather		
Midflame Wind Speed	mi/h	60
Direction of Wind Vector (from upslope)	deg	180
Terrain		
Slope Steepness	%	5
Suppression		
Number of Personnel		3
Area per Person	ft ²	50
Number of Heavy Equipment		0
Area per Heavy Equipment	ft ²	

Run Options

Calculations are only for the direction of maximum spread.

Fireline intensity, flame length, and spread distance are always for the direction of the spread calculations.

Wind and spread directions are degrees clockwise from upslope.

Wind direction is the direction the wind is pushing the fire.

Safety zone calculations are based on the flame length in the direction of maximum spread.

Flame length is used as a worst-case estimate of flame height.

Output Variables

Rate of Spread (maximum) (ch/h)

Heat per Unit Area (Btu/ft²) (continued on next page)

Input Worksheet (continued)

Fireline Intensity (Btu/ft/s)

Flame Length (ft)

Direction of Maximum Spread (from upslope) (deg)

Maximum Wind Exceeded?

Safety Zone Radius (ft)

Safety Zone Separation Distance (ft)

Safety Zone Size (ac)

Notes

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TM5243RPL

Rate of Spread (maximum)	438.2	ch/h
Heat per Unit Area	1540	Btu/ft ²
Fireline Intensity	12375	Btu/ft/s
Flame Length	34.3	ft
Direction of Maximum Spread (from upslope)	180	deg
Maximum Wind Exceeded?	No	
Safety Zone Radius	144	ft
Safety Zone Separation Distance	137	ft
Safety Zone Size	1.50	ac



Modules: SURFACE, SAFETY, SPOT, IGNITE

Description

Fuel/Vegetation

Fuel Model

1

Mean Cover Height

ft

0

Fuel Moisture

1-h Moisture

%

3

10-h Moisture

%

100-h Moisture

%

Live Herbaceous Moisture

%

Live Woody Moisture

%

Weather

20-ft Wind Speed (upslope)

mi/h

60

Wind Adjustment Factor

0.4

Air Temperature

oF

80

Terrain

Slope Steepness

%

5

Ridge-to-Valley Elevation Difference

ft

30

Ridge-to-Valley Horizontal Distance

mi

0.5

Spotting Source Location

ML

Fuel Shading from the Sun

%

0

Suppression

Number of Personnel

3

Area per Person

ft²

50

Number of Heavy Equipment

0

Area per Heavy Equipment

ft²

Run Options

Wind direction is upslope.

Calculations are only for the direction of maximum spread.

Fireline intensity, flame length, and spread distance are always
for the direction of the spread calculations.

Wind and spread directions are degrees clockwise from upslope.

Wind direction is the direction the wind is pushing the fire.
(continued on next page)



Input Worksheet (continued)

Safety zone calculations are based on the flame length
in the direction of maximum spread.

Flame length is used as a worst-case estimate of flame height.

Output Variables

Rate of Spread (maximum) (ch/h)

Flame Length (ft)

Midflame Wind Speed (upslope) (mi/h)

Maximum Wind Exceeded?

Safety Zone Radius (ft)

Safety Zone Separation Distance (ft)

Safety Zone Size (ac)

Spotting Distance from a Wind Driven Surface Fire (mi)

Probability of Ignition from a Firebrand (%)

Notes

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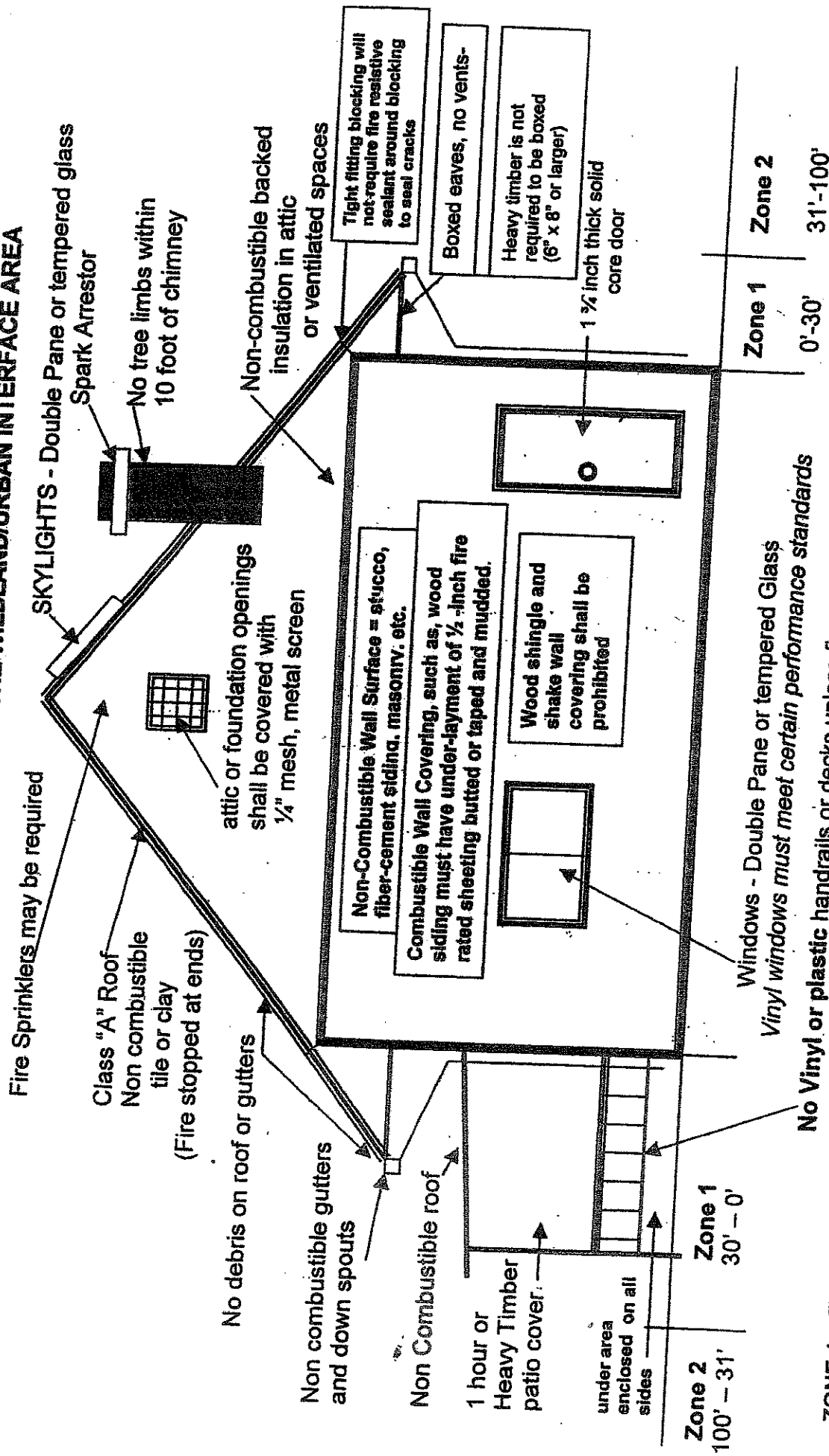
Rate of Spread (maximum)	446.5	ch/h
Flame Length	10.0	ft
Midflame Wind Speed (upslope)	24.0	mi/h
Maximum Wind Exceeded?	Yes	
Safety Zone Radius	47	ft
Safety Zone Separation Distance	40	ft
Safety Zone Size	0.16	ac
Spotting Distance from a Wind Driven Surface Fire	1.0	mi
Probability of Ignition from a Firebrand	88	%

Appendix E

Guidelines for

Ignition Resistant Construction

SAN DIEGO COUNTY
GUIDELINES FOR FIRE-RESISTIVE CONSTRUCTION WITH
LESS THAN 100 FOOT CLEARANCE- FACING THE WILDLAND/URBAN INTERFACE AREA



ZONE 1 = This zone includes the area from any building to point 30 feet away. This zone must be cleared and planted with fire resistive plants. **ZONE 2 =** this zone is between 31 to 100 feet from building. In this zone the native vegetation may remain but it must be thinned by 50% and all dead and dying vegetation must be removed. (Fuel Modification) The modification of the vegetation will slow down fire spread and reduce flame heights.

CFH

SAFEGUARDS WUID

Appendix F

Defensible Space Map

